

CERTIFICATE

By Authority Of THE UNITED STATES OF AMERICA Legally Binding Document

By the Authority Vested By Part 5 of the United States Code § 552(a) and Part 1 of the Code of Regulations § 51 the attached document has been duly INCORPORATED BY REFERENCE and shall be considered legally binding upon all citizens and residents of the United States of America. HEED THIS NOTICE: Criminal penalties may apply for noncompliance.



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WASHINGTON, D.C.

CHLORINE INSTITUTE EMERGENCY KIT “B” FOR CHLORINE TON CONTAINERS

**Edition 10
January 2009**



INSTRUCTION BOOKLET

Table of Contents

1. INTRODUCTION	1
1.1 SCOPE.....	1
1.2 CHLORINE INSTITUTE STEWARDSHIP PROGRAM.....	1
1.3 DISCLAIMER	1
1.4 APPROVAL.....	1
1.5 REVISIONS	2
1.6 REPRODUCTION	2
2. GENERAL DESCRIPTION.....	2
2.1 TRAINING AND SAFETY	2
2.2 RESPIRATORY EQUIPMENT	2
2.3 CHLORINE CONTAINER INSPECTION	2
2.4 LEAK DETECTION.....	3
2.5 ASSISTANCE	3
2.6 REPORTING REQUIREMENTS	3
2.7 EMERGENCY PLAN	3
3. IDENTIFYING AND STOPPING LEAKS.....	4
3.1 LEAK: VALVE STEM PACKING	4
3.2 LEAK: THROUGH VALVE SEAT (WILL NOT COMPLETELY CLOSE)	4
3.3 LEAK: VALVE INLET THREADS	5
3.4 LEAK: VALVE STEM ASSEMBLY BLOWN OUT.....	5
3.5 LEAK: VALVE BROKEN OFF	6
3.6 LEAK: VALVE BLOWN OUT (DUE TO STRIPPED THREADS).....	6
3.7 LEAK: FUSIBLE PLUG THREADS	6
3.8 LEAK: FUSIBLE PLUG BLOWN OUT	7
3.9 LEAK: FUSIBLE METAL OF PLUG.....	7
3.10 LEAK: SIDE WALL OF CONTAINER	7
4. HOOD FOR VALVES – DEVICE 12	8
5. HOOD FOR FUSIBLE PLUGS – DEVICE 4.....	10
6. PATCH FOR SIDE LEAKS – DEVICE 9.....	12
7. HANDLING OF CHLORINE REMAINING IN CYLINDER.....	14
8. KIT MAINTENANCE	14
8.1 AFTER USE	14
8.2 ROUTINE.....	14
8.3 SPARE PARTS.....	14
9. KIT LIMITATIONS	15
10. PARTS LIST	16
OPTIONAL EQUIPMENT	17
EMERGENCY CONTACTS	168

1. INTRODUCTION

Leaks in chlorine containers rarely occur. When they do occur, however, prompt corrective action is required by trained competent personnel with special equipment. The Chlorine Institute Emergency Kit B and this instruction booklet are made available by The Chlorine Institute, Inc. in the belief that they will be helpful in handling such emergencies.

1.1 SCOPE

This instruction booklet provides information on the design and use of the Chlorine Institute Emergency Kit B.

1.2 CHLORINE INSTITUTE STEWARDSHIP PROGRAM

The Chlorine Institute, Inc. exists to support the chlor-alkali industry and serve the public by fostering continuous improvements to safety and the protection of human health and the environment connected with the production, distribution and use of chlorine, sodium and potassium hydroxides, and sodium hypochlorite; and the distribution and use of hydrogen chloride. This support extends to giving continued attention to the security of chlorine handling operations.

Chlorine Institute members are committed to adopting CI's safety and stewardship initiatives, including pamphlets, checklists, and incident sharing, that will assist members in achieving measurable improvement. For more information on the Institute's stewardship program, visit CI's website at www.chlorineinstitute.org.

1.3 DISCLAIMER

The information in this booklet is drawn from sources believed to be reliable. The Institute and its members, jointly and severally, make no guarantee, and assume no liability, in connection with any of this information. Moreover, it should not be assumed that every acceptable procedure is included, or that special circumstances may not warrant modified or additional procedures. The user should be aware that changing technology or regulations may require changes in the recommendations contained herein. Appropriate steps should be taken to ensure that the information is current when used. These recommendations should not be confused with federal, state, provincial, municipal, or insurance requirements, or with national safety codes.

1.4 APPROVAL

The Institute's Emergency Preparedness Issue Team approved Edition 10 of this instruction booklet on January 13, 2009.

1.5 REVISIONS

Suggestions for revisions should be directed to the Secretary of the Institute.

1.5.1 Significant Revisions

In this new edition, a depiction of commonly used optional devices was added, and numerous editorial revisions were made.

1.6 REPRODUCTION

The contents of this instruction booklet are not to be copied for publication, in whole or in part, without prior permission from the Secretary of the Chlorine Institute.

2. **GENERAL DESCRIPTION**

The CI Emergency Kit B is designed for use with the standard DOT 106A500X Chlorine Ton Container in chlorine service only. These containers have an outside diameter of approximately 30 inches and overall length from 80-3/4 to 82-1/4 inches. The Kit is not designed for use on liquid full ton containers (See Section 9, Kit Limitations).

2.1 TRAINING AND SAFETY

Emergency Response and other personnel must be trained in the use of the devices and tools within The CI Emergency Kit B. Training must include the use of respiratory equipment and all other safety equipment. Knowledge of the properties of chlorine is a must.

Personnel safety is of primary importance. Emergency response should only be performed by authorized personnel who are trained in the procedures and are equipped with suitable respiratory and personal protective equipment.

See current CI Pamphlet 65, Personal Protective Equipment for Chlor-Alkali Chemicals.

2.2 RESPIRATORY EQUIPMENT

The type of respiratory equipment required will be determined by the severity of the leak and the potential for exposure to chlorine.

2.3 CHLORINE CONTAINER INSPECTION

Daily inspection of full containers is recommended whether or not they are connected to unloading lines. Through these means a leak usually can be detected in an early stage when it can be corrected or controlled by appropriate procedures.

2.4 LEAK DETECTION

As soon as there is any indication of the presence of chlorine in the air, **authorized, trained personnel equipped with suitable personal protective equipment should investigate promptly**. All other persons should be kept away from the affected area.

The location of a leak in a chlorine containing system can usually be detected by the reaction of ammonia vapor with the escaping chlorine. The reaction is a dense white cloud. The most convenient way is to use 26° Baumé aqua ammonia (ammonium hydroxide) solution in a squeeze bottle. Direct the vapors at the suspected leak. Efforts to detect the source of any leak should be carried out with an awareness of the potential hazards and use of necessary personal protective equipment.

2.5 ASSISTANCE

Chlorine emergencies should be handled only by trained personnel at the use site. If assistance is required, promptly notify your supplier. If the supplier cannot be reached or respond immediately, then summon help by activating CHLOREP, The Chlorine Emergency Plan. Use the appropriate telephone number for the U.S. or Canada. CHLOREP can also be activated by calling CHEMTREC in the U.S. 1-800-424-9300 or CANUTEC in Canada 1-613-996-6666.

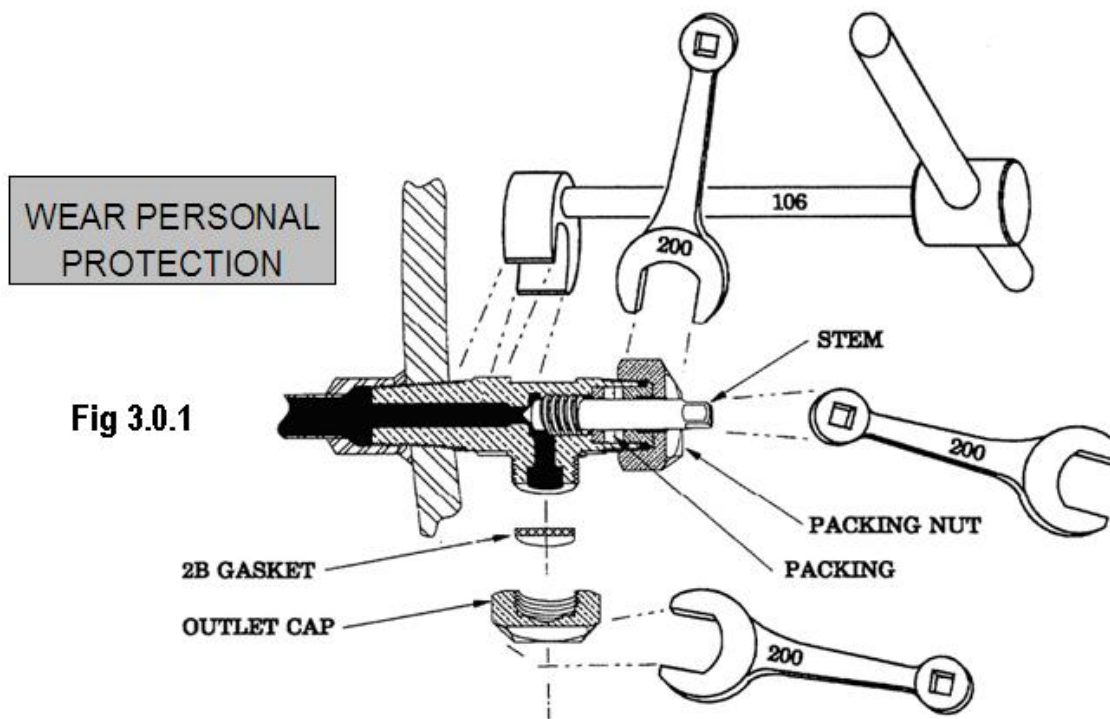
2.6 REPORTING REQUIREMENTS

There are Federal, State and local government requirements for the reporting of chlorine releases that must be met.

2.7 EMERGENCY PLAN

It is recommended that users have an emergency plan that complies with Federal, State and local requirements.

3. IDENTIFYING AND STOPPING LEAKS



3.1 LEAK: VALVE STEM PACKING

ACTION:

- A) Ensure valve stem is closed with WRENCH 200.
- B) Tighten packing nut with WRENCH 200.
- C) Test for leaks.

3.2 LEAK: THROUGH VALVE SEAT (WILL NOT COMPLETELY CLOSE)

ACTION:

- A) If disconnecting from a process, reconnect and gently open and close valve stem to dislodge foreign matter from seat, with WRENCH 200, then disconnect and apply outlet cap* and GASKET 2B with WRENCH 200. (*An outlet cap is included as part of HOOD 12A) or
- B) If unconnected container, apply outlet cap and GASKET 2B, then tighten with WRENCH 200.
- C) Test for leaks.

3.3 LEAK: VALVE INLET THREADS

ACTION:

- A) Tighten valve into container slowly with steady pressure using WRENCH 106. Use extreme caution when tightening valve.
- B) Apply DEVICE 12 (Hood and Bar Assembly) (See Section 4 for instructions).
- C) Test for leaks.

NOTE

The above mentioned leaks can also be corrected by applying DEVICE 12. (Hood and Bar Assembly) (See Section 4 for instructions).

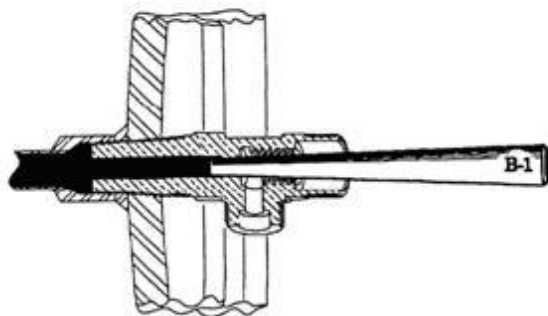


Fig 3.4.1

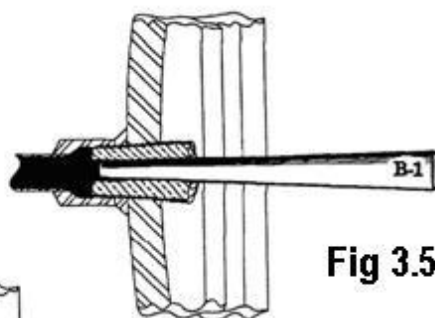


Fig 3.5.1

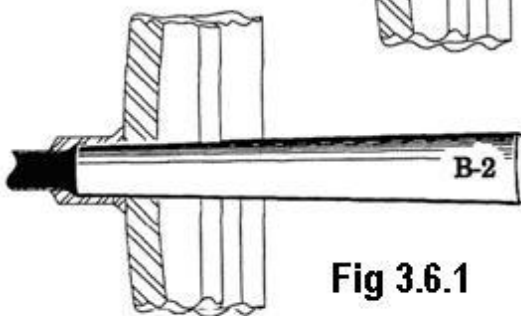


Fig 3.6.1

3.4 LEAK: VALVE STEM ASSEMBLY BLOWN OUT

ACTION:

- A) Drive small DRIFT PIN B-1 (Fig 3.4.1) into valve body.
- B) Test for leaks.

NOTE

DEVICE 12. (Hood and Bar Assembly) will probably not fit over the DRIFT PIN B-1. Secure the container in an isolated area and call your chlorine supplier.

3.5 LEAK: VALVE BROKEN OFF

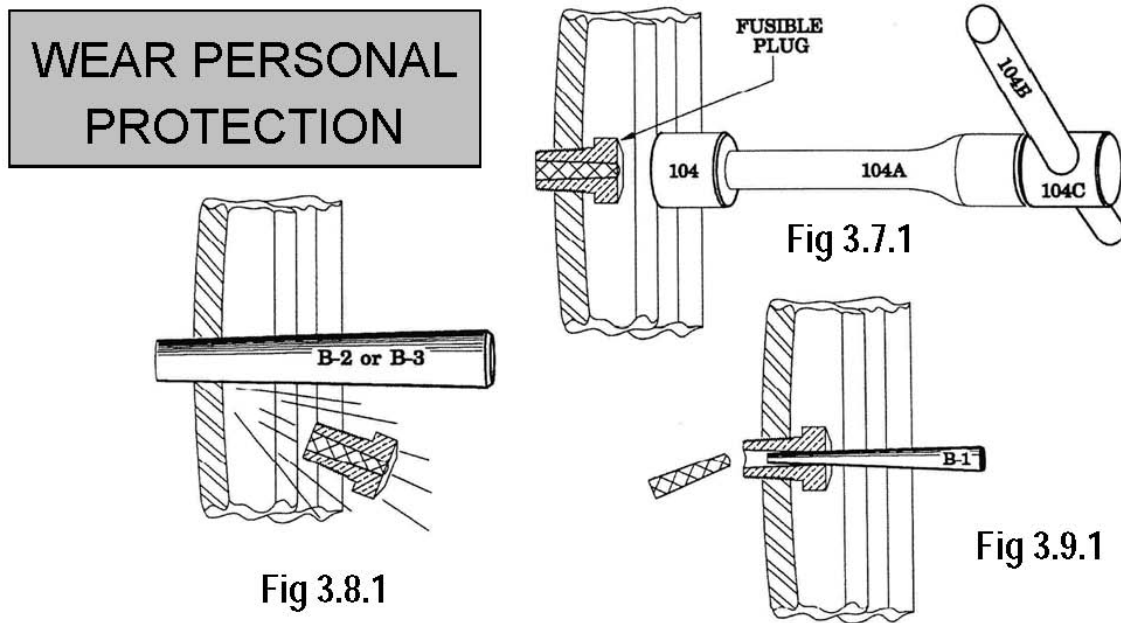
ACTION:

- A) Drive small DRIFT PIN B-1 (Fig 3.5.1) into valve shank and apply DEVICE 12 (Hood and Bar Assembly) (See Section 4 for instructions).
- B) Test for leaks.

3.6 LEAK: VALVE BLOWN OUT (DUE TO STRIPPED THREADS)

ACTION:

- A) Drive medium DRIFT PIN B-2 (Fig 3.6.1) into valve opening and apply DEVICE 12 (Hood and Bar Assembly) (See Section 4 for instructions).
- B) Test for leaks.



3.7 LEAK: FUSIBLE PLUG THREADS

ACTION:

- A) Tighten fusible plug slowly, using steady pressure with WRENCH 104. Use extreme caution when tightening valve. (Fig 3.7.1) or
- B) Apply DEVICE 4 (Hood for Fusible Plugs) (See Section 5 for instructions).

3.8 LEAK: FUSIBLE PLUG BLOWN OUT

If threads of fusible plug are so corroded that plug should pull out:

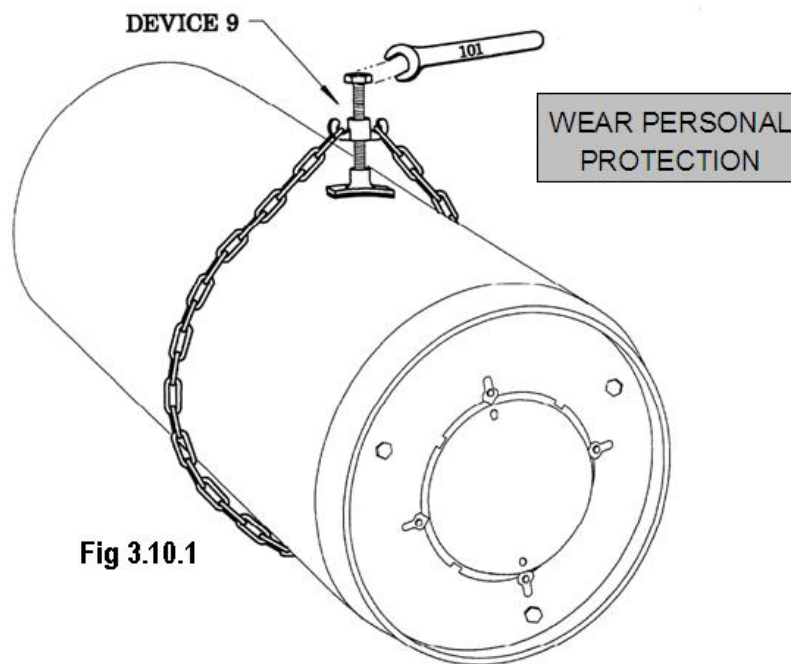
ACTION:

- A) Drive suitable drift pin into fusible plug opening with HAMMER B-6 (Fig 3.8.1).
Use DRIFT PIN B-2 for fusible plugs with $\frac{3}{4}$ NPT threads (smaller threads).
- B) Use DRIFT PIN B-3 for fusible plugs with 1 inch NPT threads (larger threads).
- C) Test for leaks.

3.9 LEAK: FUSIBLE METAL OF PLUG

ACTION:

- A) Apply DEVICE 4 (Hood for Fusible Plugs) (See Section 5 for instructions).
- B) Drive small DRIFT PIN B-1 (Fig 3.9.1) thru fusible plug.
- C) Test for leaks.



3.10 LEAK: SIDE WALL OF CONTAINER

ACTION:

- A) Apply DEVICE 9 (Patch Assembly, Fig. 3.10.1) (See Section 6 for instructions).

4. HOOD FOR VALVES – DEVICE 12

STEPS – See Fig 4.1	Equipment
NOTE: Remove valve protective hood if in place. Position container so that the leaking valve is in the upper most position. 1. Remove outlet cap from VENT VALVE (12V) on HOOD (12A) and open VALVE (12V). 2. Loosen ADJUSTING SCREWS (12F) and retract JACK SCREWS (12E) sufficiently to allow insertion of ADJUSTABLE BAR ASSEMBLY (12C) behind chime of container. NOTE: ADJUSTABLE ASSEMBLY (12C) must be in vertical position to facilitate making adjustments. 3. Clean head container around leaking valve; use SCRAPER (B-5) if paint is loose or uneven. 4. Place molded GASKET (4-12BMV) on HOOD (12A). Place HOOD (12A) with molded GASKET (4-12BMV) over leaking valve. NOTE: For certain containers having a ridge between the two valves, use molded GASKET (12BBV) or molded GASKET (12MV) which has a depression to fit over the ridge. 5. Adjust lower JACK SCREW (12E) to center one CAP SCREW (12D) over HOOD (12A) and adjust upper JACK SCREW (12E) so that ADJUSTABLE BAR ASSEMBLY (12C) fits tightly inside chime. Using WRENCH (101) tighten ADJUSTING SCREWS (12F). 6. Using WRENCH (101) tighten CAP SCREW (12D) forcing HOOD (12A) and GASKET* against head container. CAUTION: Tighten just enough to stop leak; overtightening may cut gasket. 7. Close VENT VALVE (12V) on HOOD (12A) using WRENCH (200). 8. Test for leaks. *GASKET 4-12BMV or 12BBV or 12MV	WRENCH 200 ADJUSTABLE BAR ASSEMBLY 12C WRENCH 101 SCRAPER B-5 HOOD 12A GASKET 4-12BMV WRENCH 101 ADJUSTABLE BAR ASSEMBLY 12C WRENCH 101 CAP SCREW 12D HOOD 12A WRENCH 200

DEVICE 12 INCLUDES:

HOOD ASSEMBLY – 12A
GASKETS – 4-12BMV or 12BBV or 12MV
ADJUSTABLE BAR ASSEMBLY – 12C

**WEAR PERSONAL
PROTECTION**

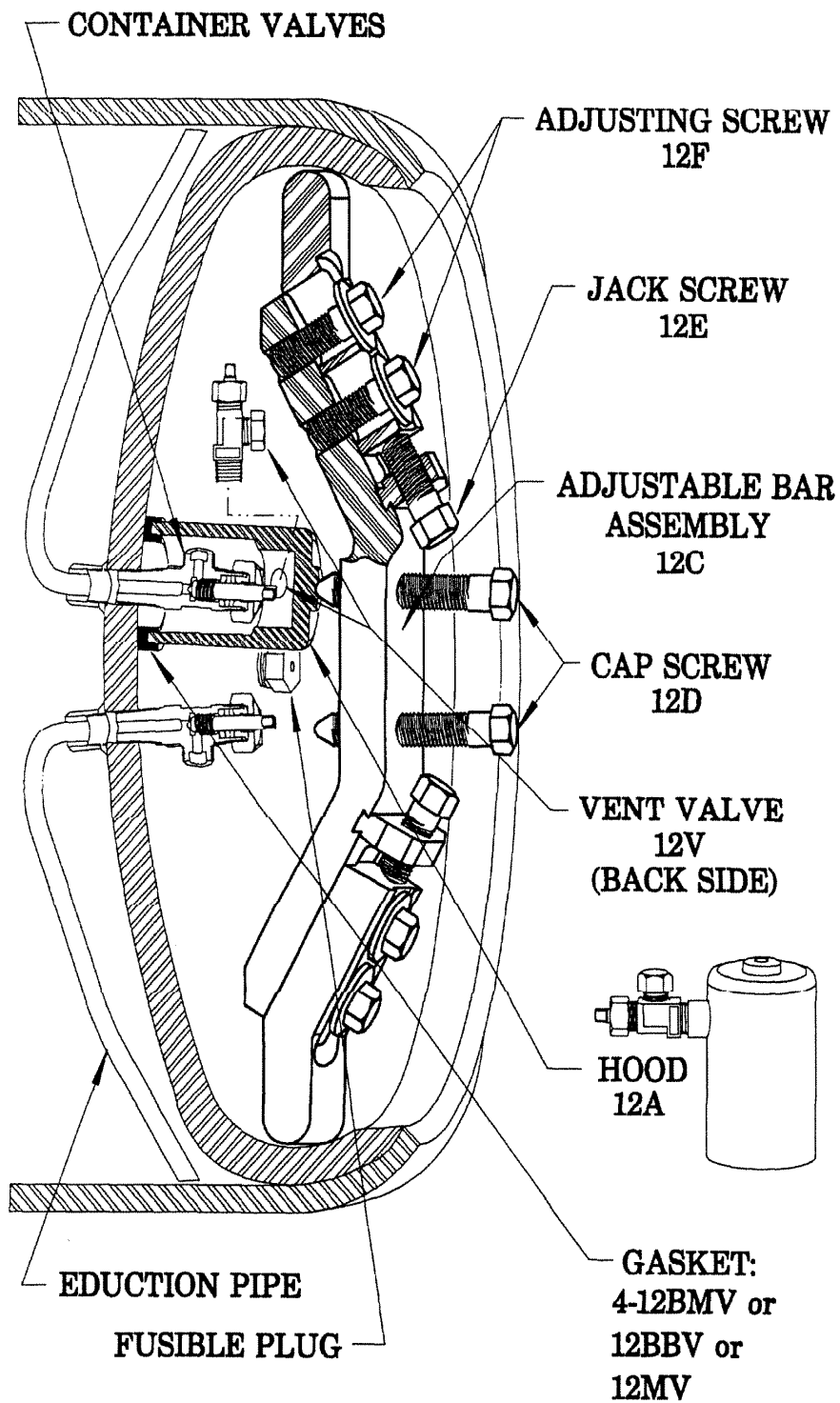


Fig 4.1

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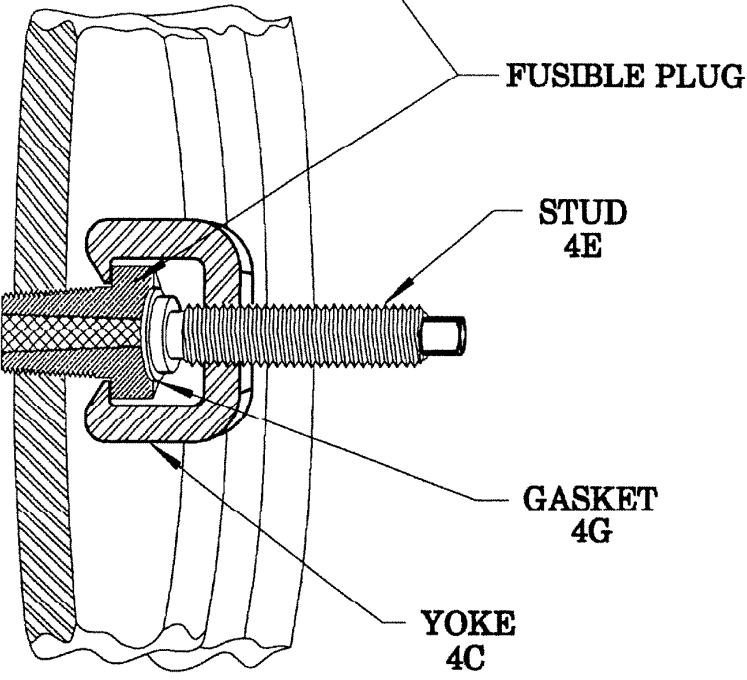
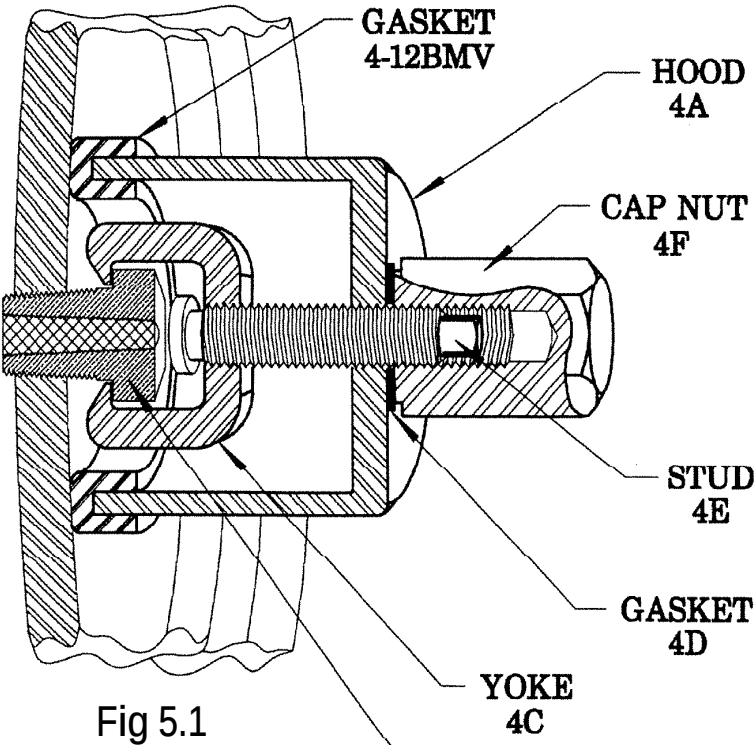
5. HOOD FOR FUSIBLE PLUGS – DEVICE 4

STEPS – See Figs 5.1 & 5.2	Equipment
NOTE: <i>Roll ton container so that leaking fusible plug is in uppermost position.</i> <u>If leak is at threads of fusible plug: (see Fig 5.1)</u> 1. Clean head of container around leaking fusible plug; use SCRAPER (B-5) if paint is loose or uneven. 2. Place GASKET (4-12BMV) on HOOD (4A). Fit YOKE (4C) with STUD (4E) over head of plug. 3. Place HOOD (4A) with GASKET (4-12BMV) over YOKE (4C) and STUD (4E) so that STUD (4E) extends out of top of HOOD (4A). 4. Place GASKET (4D) over STUD (4E). 5. Screw CAP NUT (4F) on STUD (4E) and tighten gently, using WRENCH (101), forcing HOOD (4A) and GASKET (4-12BMV) against head of container firmly enough to stop the leak. 6. Test for leaks. CAUTION: <i>If threads of fusible plug are so corroded that plug should pull out: Drive suitable DRIFT PIN (B-2 or B-3) into fusible plug opening (See Fig 3.8.1 for instructions).</i> NOTE: <i>Most ton containers have ¾ NPT fusible plug openings and require use of DRIFT PIN (B-2); Ton containers with one inch NPT openings require use of DRIFT PIN (B-3).</i> <u>If leak is in fusible material: (See Fig 5.2)</u> 1. Fit YOKE (4C) with STUD (4E) over head of fusible plug. 2. Place GASKET (4G) against face of fusible plug. 3. Tighten STUD (4E) using WRENCH (200). 4. Test for leaks. NOTE: <i>The above mentioned leak can also be corrected by applying HOOD (4A) and DRIFT PIN (B-1) (See Fig 3.9.1 for instructions).</i>	SCRAPER B-5 HOOD 4A GASKET 4-12BMV YOKE 4C STUD 4E GASKET 4D WRENCH 101 CAP NUT 4F DRIFT PIN B-2 or B-3 HAMMER B-6 YOKE 4C STUD 4E GASKET 4G WRENCH 200

DEVICE 4 INCLUDES:

HOOD – 4A	STUD – 4E
GASKET – 4-12BMV	CAP NUT – 4F
YOKE – 4C	GASKET – 4G
WRENCH – 4D	

**WEAR PERSONAL
PROTECTION**



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6. PATCH FOR SIDE LEAKS – DEVICE 9

STEPS – Fig 6.1	Equipment
1. Roll container so that leak is in uppermost position. Chock container to prevent rolling. Be sure container wall around leak is sound before proceeding with application of device. 2. Adjust CAP SCREW (9C) in YOKE (9B) until point of screw extends only slightly below YOKE (9B). 3. Slip one end of CHAIN (9A) under container and pull it through until it reaches the approximate area of leak. NOTE: <i>Insure CHAIN (9A) is straight and not twisted. If container is not on storage rack or rails, place it on rails or 2x4 planks, or dig a trench under it sufficient to allow free passage of chain under the container.</i> 4. Center CAP SCREW (9C) in YOKE (9B) in PATCH (9D) depression. 5. Hook free ends of CHAIN (9A) to ears on each side of YOKE (9B), keeping CHAIN (9A) as short as possible. 6. Use SCRAPER (B-5) if paint is loose or uneven. Place GASKET (9EV) and PATCH (9D) over leak. 7. Tighten CAP SCREW (9C) using WRENCH (101). CAUTION: <i>If there is any evidence of weakening of the container wall immediately discontinue tightening CAP SCREW (9C) and pursue other options.</i> 8. Test for leaks.	YOKE 9B CAP SCREW 9C CHAIN 9A YOKE 9B CAP SCREW 9C PATCH 9D GASKET 9EV PATCH 9D SCRAPER B-5 WRENCH 101

DEVICE 9 INCLUDES:

CHAIN – 9A
YOKE – 9B
CAP SCREW – 9C

PATCH – 9D
GASKET – 4G

**WEAR PERSONAL
PROTECTION**

PATCH FOR SIDE LEAKS – DEVICE 9

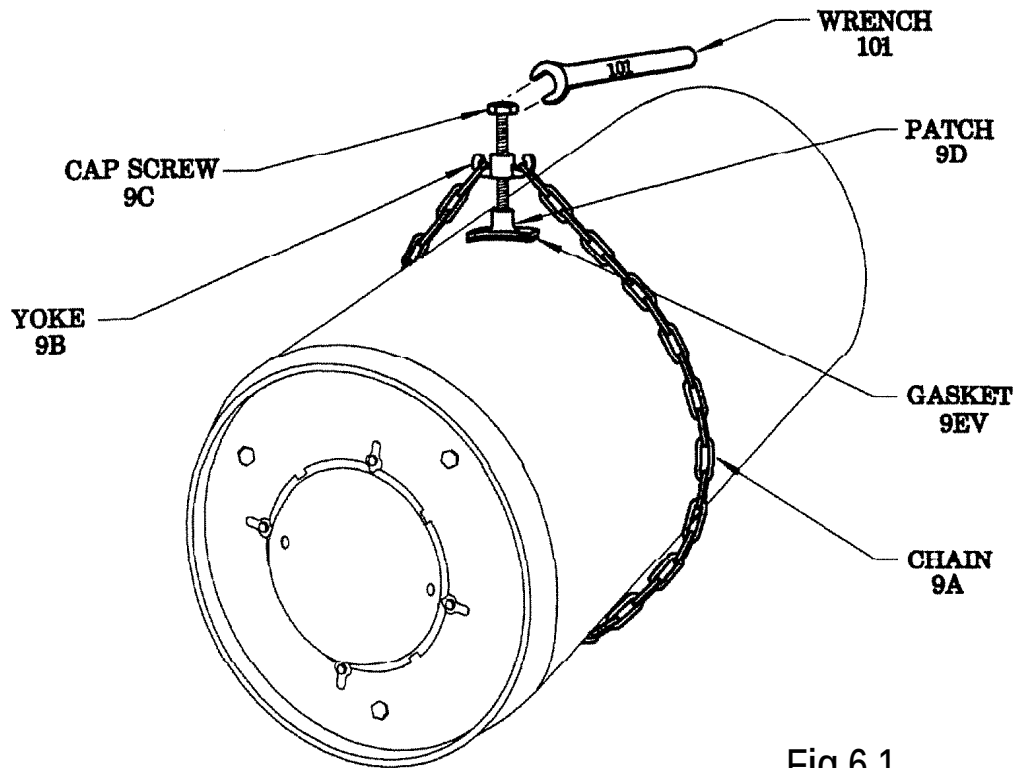


Fig 6.1

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C
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9

CHLORINE INSTITUTE EMERGENCY KIT B



Fig 6.2

7. HANDLING OF CHLORINE REMAINING IN CYLINDER

The containment of leaks by the CI Emergency Kit B devices is only an interim measure.

VALVE YOKE (B-9) and VALVE ADAPTER (B-10) are included in this kit for use in disposing of remaining chlorine in a capped container. This procedure should be attempted by experienced personnel only.

CONSULT WITH THE CHLORINE SUPPLIER IMMEDIATELY AND ARRANGE FOR ULTIMATE DISPOSAL

If supplier is unknown, see Section 2.5, Assistance, for instructions.

8. KIT MAINTENANCE

NOTE

All parts of the CI Emergency Kit B should be maintained in a ready to use condition.

8.1 AFTER USE

Inspect all parts for damage, wear and corrosion. Clean and dry all parts used. Lubricate moveable parts with a non-reactive lubricant. Replace all gaskets used.

8.2 ROUTINE

The kit should be frequently inspected by the person responsible for the equipment and checked with the contents list to insure that equipment is complete and ready for use. The box should be sealed after each inspection and such seals should be broken only by authorized persons or in case of accidents. Many owners coordinate routine inspection with training drills.

All Viton E[®] gaskets are stamped with the date of manufacture and should be removed from emergency use after a four-year shelf life. For further guidelines concerning the Viton E[®] gaskets, consult the manufacturer or The Chlorine Institute.

8.3 SPARE PARTS

Spare parts may be purchased by owners of this kit or the Solvay Emergency Kit B from the manufacturer. For information on ordering procedures consult the manufacturer or The Chlorine Institute.

Viton[®] is a registered trademark of DuPont Performance Elastomers

9. KIT LIMITATIONS

Some ton containers in current use are of such design that application of Kit B devices might be difficult or impossible. Among these are included those containers with double-dished heads; with fusible plugs located too close to valve protective hood lugs (precluding proper placement of Device 4); with fusible plugs located radially from the center of the head too close to the chime (precluding proper placement of Device 4); with valve protection hood fastened by means of a single stud located between the two operating valves (precluding use of Device 12); and with over-sized valve bushing (precluding proper seating of gasket 4-12BMV, 12BBV or 12MV and of Hood Assembly 12A.)

10. PARTS LIST

Chlorine Institute Emergency Kit B

Part Number	Description	Quantity Per Kit
4A	Hood	1
4-12BMV	Gasket, Molded Viton®	2
4C	Yoke	1
4D	Gasket, 1-1/4 OD x 11/16 ID x 1/16" thick	3
4E	Stud	1
4F	Cap Nut	1
4G	Gasket, 15/16 dia. x 1/16" thick	5
9A	Chain	1
9B	Yoke	1
9C	Cap Screw	1
9D	Patch	1
9EV	Gasket, Viton®, 3" sq. x 1/8" thick	2
12A	Hood Assembly (with Vent Valve 12V)	1
12BBV	Gasket, Viton®, 5 OD x 2 ID x 1/2 thick	1
12C	Adjustable Bar Assembly	1
12MV	Gasket, Molded Viton®, 5-1/4 OD x 2-1/4 ID x 3/4 thick	1
101	Wrench, straight open end, 1-1/4 x 12" long.	1
104	Wrench, Socket, 1-1/4 hex	1
104A	Wrench extension, 1" sq. drive x 9" long	1
104B	Wrench Bar, 1" dia. X 20" long	1
104C	Wrench Bar, Adapter, 1" round to 1" square	1
106	Wrench, Crowfoot, special 1-5/32 x 11" long	1
200	Wrench, 3/8 sq. box, 1-1/4 open end x 7-1/4 long	1
B-1	Drift Pin, 9/32 x 1/2 x 6" long	2
B-2	Drift Pin, 7/8 x 1-1/4 x 8" long	2
B-3	Drift Pin, 1-1/16 x 1-7/16 x 8" long	2
B-4	Ring, vent valve packing, 7/8 OD x 15/32 ID x 1/4 thick	5
B-5	Paint Scraper, 1-1/4 blade	1
B-6	Hammer, machinist, 48 oz.	1
B-7	Kit Box Seal	15
B-8	Gasket Sack	1
B-9	Valve Yoke	1
B-10	Valve Adapter	1
B-11	Gasket, 15/16 OD x 9/16 ID x 1/16 thick	5
B-12	Plastic Gasket Box	1
151-B	Kit Tool Box	1
153	Tool Roll	1
	Instruction Booklet	2
	CI Pamphlet 1, Chlorine Basics	1

For kits manufactured after January 1, 2008, the individual 1" drive components of socket wrench assembly 104 was replaced with a completely machined, 1 piece, wrench. This new design will operate exactly as the previous design as shown on page 6 of CI Kit B Instruction Booklet, Edition 10, 2009.

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OPTIONAL EQUIPMENT	
Device Part #400	Device Part #405
	
Stripped Valve Stem Clamping Device: Designed to close cylinder and ton valves with stripped valve stem threads.	Valve Plugging Device: Designed to seal leaks in valves with stripped outlet threads or corroded outlet face.

Emergency Contacts

Chlorine Supplier: _____

Address: _____

Phone: _____

CHEMTREC* **800-424-9300**

CANUTEC** **613-996-6666**

Nearest Chlorine
Producer or Packager: _____

Address: _____

Phone: _____

Police Department: _____

Fire Department: _____

First Aid: _____

* In the UNITED STATES, summon help through CHEMTREC, the Chemical Transportation Emergency Center at the American Chemistry Council in Arlington, VA.

(toll free)

800-424-9300

** In CANADA, summon help through CANUTEC, the Canadian Transport Emergency Centre in Ottawa.

CANADA, All provinces (call collect)

613-996-6666